Log Event A

Borehole # 30-03-03

Borehole Information

Farm : C	**Tank :** C-103	**Site Number :** 299-E27-75
N-Coord : 42,861	**W-Coord :** 48,140	**TOC Elevation :** 645.00
Water Level, ft : 18.75	**Date Drilled :** 7/31/1974	

Casing Record

Type : Steel-welded	Thickness : 0.280	ID, in. : 6
Top Depth, ft. : 0	Bottom Depth, ft. : 100	

Borehole Notes:
This borehole was drilled in June and July 1974 to a depth of 100 ft with 6-in. casing. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. No information concerning grouting or perforations was available; therefore, it is assumed that the borehole was not grouted or perforated. The top of the casing, which is the zero reference for the SGLS, is even with the ground surface. The borehole was filled with water below a depth of 18.8 ft.

Equipment Information

Logging System : 2	**Detector Type :** HPGe	**Detector Efficiency:** 35.0 %
Calibration Date : 10/1996	**Calibration Reference :** GJO-HAN-13	**Logging Procedure :** P-GJPO-1783

Log Run Information

Log Run Number : 1	**Log Run Date :** 04/11/1997	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 98.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 23.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

Log Run Number : 2	**Log Run Date :** 04/14/1997	**Logging Engineer:** Bob Spatz
Start Depth, ft.: 24.0	**Counting Time, sec.:** 100	**L/R :** L **Shield :** N
Finish Depth, ft. : 0.0	**MSA Interval, ft. :** 0.5	**Log Speed, ft/min.:** n/a

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Analysis Information

Analyst : D.L. Parker

Data Processing Reference : P-GJPO-1787 Analysis Date : 05/06/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation. There was some gain drift and it was necessary to adjust the established channel-to-energy parameters during processing of log data to maintain proper peak identification.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis. A water correction was applied to the data collected from 19 ft and deeper in the borehole.

The man-made radionuclides Cs-137 and Co-60 were detected in this borehole. Cs-137 contamination was measured almost continuously from the ground surface to a depth of 41 ft and at 98 ft. Co-60 contamination was detected almost continuously from 85 to 92.5 ft, at 96 ft, and at 97 ft.

The K-40 and Th-232 concentrations increase below a depth of 19 ft. This increase corresponds to the top of the water in the borehole and indicates the water correction applied to the data from 19 ft and deeper is too large and is probably overestimating both the natural and man-made radionuclide concentrations throughout the water-filled interval. K-40 concentrations increase below a depth of about 43.5 ft from a background of about 10 to about 13 pCi/g. The KUT concentrations increase again below a depth of about 54 ft. Intervals of relatively low K-40 concentrations were detected from 70.5 to 74 ft and 78.5 to 81 ft. K-40 concentrations increase below 85 ft.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank C-103.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations. Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

A comparison plot is also provided showing the Cs-137 and Co-60 concentrations determined from the SGLS and those determined from the Radionuclide Logging System (RLS) in 1994.

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A plot of representative historical gross gamma-ray logs from 1975 to 1992 is included. The headings of the plots identify the date on which the data in the plots were gathered.